

LINNTON PLYWOOD ASSOCIATION (Columbia River Sand & Gravel) CSM Site Summary

LINNTON PLYWOOD ASSOCIATION

Oregon DEQ ECSI #2373 (Linnton Plywood), #2351 (Columbia River Sand & Gravel). Although CRSG has its own ECSI number, this facility is discussed as part of the Linnton Plywood site, except where noted below.

10504 NW St. Helens Road

DEQ Site Mgr: Don Pettit

Latitude: 45.5989°

Longitude: -122.7829°

Township/Range/Section: 1N/1W/2

River Mile: 4.7 West bank

LWG Member

☐ Yes ☒ No

Upland Analytical Data Status: ☐ Electronic Data Available ☒ Hardcopies only

1. SUMMARY OF POTENTIAL CONTAMINANT TRANSPORT PATHWAYS TO THE RIVER

The current understanding of the transport mechanism of contaminants from the uplands portions of the Linnton Plywood site to the river is summarized in this section and Table 1, and supported in the following sections.

1.1. Overland Transport

Except for bank areas, the entire Linnton Plywood site is covered with impervious surfaces. There is evidence of bank erosion near the former maintenance shop and Outfall 5 (City Designation WR-106) area. Minimal overland transport of contaminants via soil erosion is expected from other areas of the site. Overland transport of contaminants during historical operations is unknown.

1.2. Riverbank Erosion

The shoreline is a mixture of riprap and vegetation. There is evidence of bank erosion in the vicinity of the former maintenance shop and Outfall 5 (WR-106) area. CH2M HILL (2002b) found concentrations of gasoline- and/or diesel-range hydrocarbons ranging from 900 to 2,000 mg/kg in soil samples from these areas. Approximately 10.5 cubic yards of soil/sediment was removed from the base of Outfall 5 (WR-106) in May and July 2003 (Anderson 2003, pers. comm.).

1.3. Groundwater

Based on the results from Pre-RI investigations (CH2M HILL 2002a,b) and the DEQ's Source Control Decision letter to the EPA (DEQ 2004b), the site does not appear to be a current or ongoing source to groundwater. The DEQ recommends no further investigation of upland sources of contamination to the Willamette River.

1.4. Direct Discharge (Overwater Activities and Stormwater/Wastewater Systems)

There are seven NPDES-permitted outfalls associated with this property: six are located on the Linnton Plywood portion and one on the Columbia River Sand & Gravel (CRSG) site. Concentrations of several contaminants in "soil/sediment" from two of these outfalls (5 and 6, also designated WR-106 and WR-126) have exceeded applicable DEQ Level II sediment

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screening values. Soil/sediment from the base of Outfall 5 (WR-106) was removed during a source area removal action in May 2003, followed by additional soil removal in July 2003. **Outfall 6 (WR-126) also receives stormwater runoff from several unknown, upgradient locations.** CH2M HILL's (2002b) sampling results suggested that hazardous substances from the facility's pale oil application and overflow from the scrubber migrated via the stormwater drainage system to sediments in the discharge location of Outfall 6 (WR-126). With the cessation of operations in 2001, follow-up results showed lower concentrations of all analytes. **Linnton Plywood has instituted ongoing source control measures (e.g., catch basin cleaning and filter replacement).**

are these?
analyzed?

Sand is delivered to the CRSG site by tug and barge. DEQ does not believe that CRSG's operations are a source of contaminants to the Willamette River (Pettit 2003, per. comm.). Raw logs were delivered to the Linnton Plywood facility and prepared for the manufacture of plywood while over water up until 1992, which could have contributed machinery and transformer oils, metals, fuels, rubber, and organic debris from log handling to river sediments. (Pettit 2003, pers.comm.)

1.5. Relationship of Upland Sources to River Sediments

See Final CSM Update.

1.6. Sediment Transport

The Linnton Plywood site is adjacent to a channel area characterized as predominantly depositional in the Portland Harbor Work Plan based on the sediment-profile and time-series bathymetry surveys (Integral et al. 2004). The Sediment Trend Analysis[®] results suggest that this reach periodically experiences both net accretion and net erosion. The time-series bathymetric change data over the 25-month period from January 2002 through February 2004 (Integral and DEA 2004) show a large region of sediment accretion (with deposits up to 30 to 60 cm in extent) along the edge of the channel just offshore of this property. Inshore of this channel edge, there is an area at the downstream end of the property that shows net erosion while the upstream portion shows no change. The very shallow areas immediately offshore of the site (i.e., within about 75 ft of the shoreline) have not been surveyed so there is no information on riverbed elevation changes or sediment transport patterns immediately adjacent to the property.

2. CSM SITE SUMMARY REVISIONS

Date of Last Revision: March 4, 2005

3. PROJECT STATUS

Activity	Date(s)/Comments	
PA/XPA	<input type="checkbox"/>	
RI	<input checked="" type="checkbox"/>	Pre-RI Assessment completed by CH2M HILL in February 2002 (2002b), followed by additional enhancement sampling (CH2M HILL 2002a). A public notice to approve the Pre-RI and the cleanup of soils contaminated by petroleum and metals at the Linnton Plywood site was published on October 1, 2003.
FS	<input type="checkbox"/>	
Interim Action/Source Control	<input checked="" type="checkbox"/>	Source control decision published May 2004 (Pettit 2004, pers. comm.)
ROD	<input type="checkbox"/>	
RD/RA	<input type="checkbox"/>	
NFA	<input type="checkbox"/>	Additional evaluations needed before DEQ determines NFA for non-river issues (Pettit 2004, pers comm.)

DEQ Portland Harbor Site Ranking (Tier 1, 2, 3, or Not ranked): Tier 2

4. SITE OWNER HISTORY

Sources: DEQ 1999, 2004

Owner/Occupant	Type of Operation	Years
Linnton Plywood Association – owner/operator	Warehousing in plywood building	2001 - present
Linnton Plywood Association - owner/operator	Plywood manufacturing	1971 - 2001
Columbia River Sand & Gravel – operator (occupied site starting in 1997)	Sand barging and redistribution	1994 - present
Spokane, Portland & Seattle Railway Company and Burlington Northern, Inc. - owner / Linnton Plywood Association - operator (early 1950s – present)	Plywood manufacturing	1962 - ?
Columbia River Stevedoring Company - operator	Unknown	1935? - ?
Clark & Wilson Lumber Company – operator; owner/operator starting in 1944	Saw mill and lumber company	Operator: 1905 – 1933? Owner/Operator: 1944? - ?

5. PROPERTY DESCRIPTION

The Willamette River borders the Linnton Plywood site on its western boundary, at approximately RM 4.7. The facility is located east of Hwy 30 in the Linnton community of Portland (Figure 1), a mixed industrial, commercial, and residential use area. About 35 residences are located 0.25 mile away from the facility. The properties north and south of the Linnton Plywood site along the river are owned by Babcock Land Company and ARCO, respectively. The 26.5-acre Linnton Plywood site is divided into two operational areas: 16 acres to the north is Linnton's manufacturing facility, and the remaining portion is leased to CRSG. A separate office area is located west of the main plant across the Burlington Northern railroad tracks (CH2M HILL 2002b; DEQ 1999, 2004).

The entire Linnton Plywood site is covered with impervious surfaces, including railroad tracks, roads, offices, and production buildings, with the exception of bank areas. The site slopes steeply toward the Willamette shoreline, which is covered with a mixture of riprap and vegetation, mostly Oregon ash and black cottonwood. There are four drainage areas and six outfalls associated with the site [see Supplemental Figure 2 of CH2M HILL (2000)]. Outfall 6 (WR-126) also receives stormwater from upgradient and offsite sources (CH2M HILL 2002b; Burnet 2003, pers. comm.). **The six outfalls are combined under an NPDES permit.**

Stormwater runoff on the CRSG site is routed to two discharge areas, as shown on the Glacier Northwest Linnton Stormwater Handling Site Plan (see attached supplemental figure). **SW-1 drains the majority of the site and discharges through an outfall to the Willamette after the stormwater is routed through a sediment fence, straw bales, and a settling pond.** SW-2 drains the western portion and stormwater **infiltrates the ground.** These discharges are also NPDES-permitted.

As shown on Figure 1, the entire shoreline encompassing Linnton Plywood and CRSG is designated as a

Need drainage flow map

recreational beach (Integral et al. 2004). Linnton Plywood applied for a lease for a log raft storage area, approximately 25,500 square feet, from the Oregon Department of State Lands (DSL) in 1998.

6. CURRENT SITE USE

Linnton Plywood. Linnton's plywood manufacturing operation has ceased at the site, and equipment is being liquidated for a possible sale of the property. The former plywood manufacturing building is being used for a warehouse, details of which were not contained in DEQ files. According to the ECSI database (DEQ 2004), Linnton Plywood is still registered as a conditionally exempt generator of hazardous waste.

CRSG. CRSG barges clean sand from dredging projects in the Columbia River to their leased property for redistribution onto trucks. Willamette River water used to slurry the sand is collected in several ponds at the site, filtered, and discharged to the Willamette River. Approximately 575 gallons of diesel, plus small amounts of motor, hydraulic, and used oils, are stored in a building with secondary containment (DEQ 1999).

7. SITE USE HISTORY

Linnton Plywood operated on the site since the 1950s until the plant shut down in December 2001 due to poor market conditions and financial problems. Their plywood manufacturing facility occupied the northern portion of the site, while the southern half has been leased to CRSG since 1994.

Linnton Plywood used **phenol-formaldehyde resin, sodium hydroxide, and petroleum hydrocarbons**, such as oil, diesel, and kerosene, in the manufacture of plywood. The principal raw material was veneer. Most historical operations occurred in four connected buildings: the gas dryer, steam dryer, green veneer, and pressing and finishing buildings. Raw logs were stored along the waterfront pilings until processing operations began at the dock. Over-water activities included cutting off ends of logs, cutting to approximate lengths for peeling, and loading the prepared lengths onto a conveyer (known as the "Green End" of the operations) (DEQ 2004; Pettit 2003, pers. comm.). At one time, the waste bark material was routed to wood waste storage areas via overhead conveyers, where it was used to fuel boilers at the site (DEQ 1999).

Although Linnton Plywood brokered the lease with CRSG in 1994, CRSG did not occupy the property until 1997. This portion of the property was formerly the site of the Clark and Wilson Lumber Company, which was destroyed by fire in 1948 (DEQ 1999).

DEQ (1999) noted that a 1985 dredging permit renewal for the nearby GATX terminal referred to plans to place dredged material on the Linnton Plywood property. However, the DEQ permit file does not indicate if the renewal permit was issued, if dredging occurred, and if dredged material was ever placed on the Linnton property.

8. CURRENT AND HISTORIC SOURCES AND COPCS

Current understanding of the historic and current potential upland and overwater sources at the site are summarized in Table 1. The following sections provide a brief discussion of the potential sources at the site requiring additional discussion.

8.1. Uplands

Linnton Plywood: CH2M HILL's Pre-Remedial Investigation Work Plan identified the following potential sources on the Linnton Plywood property [see Supplemental Figure 2 from CH2M HILL (2000)], including the area leased to CRSG:

- **Historic Clark and Wilson Lumber Mill Operations (Main Plant) Dredge Spoil Disposal Area.** The area leased to CRSG was once used for dredge spoil disposal from dredging the historic log processing area. CRSG has since placed 10 feet of clean fill in this area.
- **Historic Clark and Wilson Lumber Mill Operations (Wigwam Burner).** This burner was also located on the CRSG site in the area used for dredge spoil disposal. CRSG has since placed 10 feet of clean fill in this area.
- **Sander Dust Ash Disposal.** The air treatment system on the CRSG site captured solids from the sander dust burner, which were spread on the ground to dry and used as fill on this parcel. CRSG has since placed 10 feet of clean fill in this area. Currently, CRSG mixes the dust with the sand.
- **Green End Operations.** This process took place over water (raw log barking) and in the mill (log peeling). Oils and solvents were used to maintain the equipment.
- **Auto Repair and Steam Cleaning Area Soils.** Auto repair and steam cleaning activities could have released hazardous substances to surrounding soils (Pettit 2003, pers. comm.).
- **Maintenance Shop.** This covered area was used for mill maintenance activities, including use of chemicals for tool and part cleaning, and metal grinding. PCB-containing transformers are located in this area. At one time, a methylene chloride-containing adhesive was stored here. Occasionally the shop was spray-washed, with washwater conveyed into the stormwater collection system that discharged through Outfall 5.
- **Pale Oil Application, Edge Sealer Application, Sander Dust Burner Scrubber Overflow.** These activities were conducted on paved areas. Stormwater drainage was directed to Outfall 6 (WR-126). Transformer storage is also located within this drainage area.

Of these seven source areas, only the maintenance shop and the area encompassing the pale oil application, edge sealer application, and sander dust burner scrubber overflow activities [see Supplemental Figure 2 from CH2M HILL (2000)], were identified as potentially complete pathways for contaminants to reach the river sediment (discussed in Section 1). The COIs were identified as TPH, PCBs, heavy metals, SVOCs in catch basin sediments or soil entrained in stormwater runoff, and TPH, SVOCs, heavy metals, and VOCs in riverbank groundwater and soils (CH2M HILL 2002b)

CRSG: DEQ does not believe that CRSG's operations are a source of contaminants to the Willamette River (Pettit 2003, per. comm.).

8.2. Overwater Activities

☒ Yes ☐ No

Linnton Plywood: Raw logs were prepared for the manufacture of plywood while over water, which could have contributed machinery and transformer oils, metals, fuels, rubber, and organic debris from log handling to river sediments. This over-water work ceased in 1992, when Linnton Plywood began importing veneer sheets via truck and rail (CH2M HILL 2000; Pettit 2003, pers. comm.).

Linnton Plywood applied for a lease for a log raft storage area, approximately 25,500 square feet, from the Oregon DSL in 1998. It is unknown if this overwater use actually occurred based on a review of DEQ files.

CRSG: Sand is delivered to the CRSG site by tug and barge. Accidental releases of fuels and oils from tug operations would be a direct pathway for contaminants to reach in-water media.

8.3. Spills

Known or documented spills at Linnton Plywood and CRSG facilities were obtained either from DEQ's Emergency Response Information System (ERIS) database for the period of 1995 to 2004, from oil and chemical spills recorded from 1982 to 2003 by the U.S. Coast Guard and the National Response Center's centralized federal database [see Appendix E of the Portland Harbor Work Plan (Integral et al. 2004)], from facility-specific technical reports, or from DEQ correspondence. These spills are summarized below.

Date	Material(s) Released	Volume Spilled (gallons)	Spill Surface (gravel, asphalt, sewer)	Action Taken (yes/no)
9/94	"Milky substance" from broken separator	Not reported	Asphalt	Not reported
2/17/95	Pale oil	20-55	Onsite storm drain, created sheen on river	No, a Notice of Noncompliance issued and civil penalty levied by DEQ

9. PHYSICAL SITE SETTING

Although 13 direct push borings have been completed at the site, the Pre-RI Assessment reports do not include information regarding the geology and hydrogeology of the site. Field and boring logs associated with the assessment, available in the DEQ file, were reviewed for site-specific geologic and hydrogeologic information. The maximum depth investigated at the site was 40 feet below ground surface (bgs).

9.1. Geology

Of the 13 direct push borings, only three were logged for soil information in the following areas: steam cleaner, wigwam burner, and Clarke and Wilson center. The boring logs indicate fill material at least 24 feet thick consisting primarily of silt and fine-to-medium-grained sand. The fill also includes burner ash, angular gravel, wood chips, and brick. Pleistocene/Recent Alluvium underlying the fill includes silt and fine-grained sand with minor clay.

9.2. Hydrogeology

Groundwater was encountered at depths ranging from 23 to 33 feet bgs in the borings. Shallow groundwater in the region generally flows toward the Willamette River. No seeps were identified at the site.

10. NATURE AND EXTENT (Current Understanding)

The current understanding of the nature and extent of contamination for the uplands portions of the site is summarized in this section. If no data exist for a specific medium, it is noted and evaluated to determine if this may represent a data gap.

10.1. Soil

10.1.1. Upland Soil Investigations

☒ Yes ☐ No

Linnton Plywood. CH2M HILL (2002b) collected surface soil samples in the auto repair, steam cleaning, and maintenance shop areas of the site [see Supplemental Figure 2 from CH2M HILL (2002b)]. Results are provided below:

Analyte	Minimum Concentration $\mu\text{g/kg}$	Maximum Concentration $\mu\text{g/kg}$
Total Petroleum Hydrocarbons (TPH)		
TPH-Gasoline	120	15,900
TPH-Diesel	48,200	1,820,000
Metals		
Copper	111,000	618,000
Chromium	12,600	105,000
Lead	13,900	402,000
Zinc	12,100	739,000
Bis(2-ethylhexyl)phthalate	ND*	6,330
Benzl butyl phthalate	ND	7,070

ND = not detected

Additional soil sampling was performed by CH2M HILL in the historic ash disposal area in October 2002 [see Supplemental Figure 5-1 from CH2M Hill (2002a)]. The exact location of this disposal area was difficult to determine given varying institutional memories. Boiler ash and scrubber ash from operational areas were also collected and analyzed to corroborate results from the historical disposal area. None of the disposal area samples contained the elevated chromium observed in the sources sample or the high TPH in the scrubber ash. Lead was detected in a single sample above the EPA PRG in an area covered with pavement (CH2M HILL 2002a). Boiler and scrubber ash has since been removed from the property (Burnet 2003, pers. comm.; Pettit 2003, pers. comm.).

A knife-grinding debris pile adjacent to the river was found to contain chromium, iron, and low concentrations of residual oil; this pile was removed from the property in May and July 2003 (DEQ 2003; Pettit 2003, pers. comm.).

CRSG. No soil investigations have occurred on the CRSB property.

10.1.2. Riverbank Samples

☒ Yes ☐ No

Bank erosion from the maintenance shop and Outfall 5 (WR-106) area could potentially contribute hydrocarbon-impacted soils to the river. Concentrations of gasoline- and/or diesel-range hydrocarbons ranged from 900 to 2,000 mg/kg in soil samples from the bank area (CH2M HILL 2002b).

10.1.3. Summary

According to James Anderson (2003, pers. comm.), DEQ Portland Harbor Cleanup Manager, the characterization and cleanup of soils on the Linnton Plywood site is complete, and the site is not considered to be "a current threat to the river."

10.2. Groundwater

10.2.1. Groundwater Investigations

☒ Yes ☐ No

In October 2001, groundwater samples were collected from nine temporary well points at the site as part of the Pre-RI Assessment (CH2M HILL 2002b) [see Supplemental Figures 2 and 3 from CH2M Hill (2002b)]. Because of the presence of low-yield silt in the formation, sample volumes during sample collection were limited, and non-turbid samples could not be collected from temporary well screens. In October 2002, groundwater samples were collected from four temporary wells as part of the Enhancement Sampling for Pre-RI (CH2M HILL 2002a).

10.2.2. NAPL (Historic & Current)

☐ Yes ☒ No

Available records indicate no evidence of nonaqueous-phase liquids (NAPL) at the site.

10.2.3. Dissolved Contaminant Plumes

☐ Yes ☒ No

Some samples collected during the October 2001 sampling event, without field filtering, contained metals and phthalates at concentrations slightly above the chronic freshwater ambient freshwater criteria. Groundwater samples collected during the October 2002 event were filtered in the field to determine whether the high turbidity may have biased the analytical results. Based on a comparison between the two sampling events, the DEQ concurred with CH2M HILL that elevated concentrations of some metals and phthalates were biased upward (by 1 to 2 orders of magnitude) in the samples collected during the first event because of the turbid samples. Therefore, the groundwater data collected during the October 2002 event were given a higher priority when assessing groundwater quality data for this site summary.

A diesel plume was identified between the maintenance shop and the Willamette River. Relatively low concentrations of petroleum hydrocarbons, metals, and phthalates were identified at other areas of the site (auto repair area, steam-cleaning area, green end area, boiler house area, wigwam burner area, sander dust ash area, and former Clarke and Wilson property). Figure 2 shows the estimated distribution of contaminants in groundwater based on Pre-RI Assessment data.

According to the DEQ's Source Control Decision letter (DEQ 2004b), the site does not appear to be a current or ongoing source of Willamette River water or sediment contamination. The DEQ recommends no further investigation of upland sources of contamination to the Willamette River.

Plume Characterization Status ☒ Complete ☐ Incomplete

According to the DEQ, the plumes have been characterized with regards to potential impacts to the Willamette River.

Min/Max Detections (Current situation)

The following table summarizes minimum and maximum concentrations of constituents detected at the site.

Analytes	Minimum Concentration $\mu\text{g/L}$	Maximum Concentration $\mu\text{g/L}$
Total Petroleum Hydrocarbons (TPH)		
TPH-Gasoline	ND*	96*
TPH-Diesel	ND*	4,340*
Metals		
Copper	ND	15.3
Chromium	ND*	66.1*
Lead	3.2	4.12
Bis(2-ethylhexyl)phthalate		
	ND*	103*

$\mu\text{g/L}$ = micrograms per liter

ND = not detected

* = unfiltered groundwater sample

What about other metals?

Preferential Pathways

No preferential pathways were identified during the Pre-RI Assessment.

Downgradient Plume Monitoring Points (min/max detections)

Most of the groundwater samples collected at the site were located near the Willamette River. Refer to the Min/Max Detections section above.

Visual Seep Sample Data

☐ Yes ☒ No

No seeps have been identified at the site (GSI 2003).

Nearshore Porewater Data

No porewater data have been collected at the site.

Groundwater Plume Temporal Trend

Insufficient data are available to assess plume distributions over time.

10.3. Surface Water

10.3.1. Surface Water Investigation

☐ Yes ☒ No

10.3.2. General or Individual Stormwater Permit [Current or Past]

☒ Yes ☐ No

Currently, both Linnton and CRSG have general stormwater permits. (Note that Outfalls 3A, 4, 5, and 6 are designated by the City as Outfalls WR-103, WR-364, WR-106, WR-126, respectively)

Permit Holder	Permit Type	File Number	Start Date	Outfalls	Parameters/ Frequency
Linnton Plywood Association	GEN12Z (Will expire 6/30/07)	10434	10/28/97	3A, 4, 5, 6	Standard ¹ / twice yearly
Linnton Plywood Association	GEN12Z Expired 9/30/96	10435	8/24/92	3A, 4, 5, 6	Standard ¹ / twice yearly
CRSG	GEN12Z	14458	8/7/01	SW-1, SW-2	Standard ¹ / twice yearly

¹ Standard GEN12Z permit requirements include pH, oil and grease, total suspended solids, copper, lead, and zinc. *E. coli* may also be required. Linnton is required to do visual monitoring of Outfall 3 for floating solids and oil & grease sheen once a month when discharging.

Do other non-stormwater wastes discharge to the system?

☒ Yes ☐ No

Stormwater that discharges through Linnton's Outfall 6 (WR-126) originates from a 36-inch pipe that also drains unknown upgradient and offsite areas along Highway 30 (Burnet 2002, pers. comm.). CH2M HILL (2002b) indicated that Linnton Plywood connected to Outfall 6 in the 1960s.

10.3.3. Stormwater Data

☐ Yes ☒ No

Only permit-required monitoring data are collected.

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have there been any violations*

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10.3.4. Catch Basin Solids Data

☒ Yes ☐ No

Catch basin solids data were collected by CH2M HILL (2002b) in October 2001 from site catch basins (associated with Outfalls 2 (WR-105), 3 (WR-104), and 3A (WR-103) and from "soil/sediment" beneath Outfalls 5 (WR-106) and 6 (WR-126). Catch basin samples were found to contain **detectable concentrations** of chromium, copper, lead, zinc, — *I would imagine all metals would be detectable* — petroleum hydrocarbons, halogenated hydrocarbons, phthalates, PAHs, and PCBs.

McDonald PEC
Cu 149 mg/kg
Pb 128 mg/kg
Catch basin samples don't match sediment
Zn 459 mg/kg
bis2phth 800 µg/kg
PCBT 0.39 µg/kg
Copper was detected in the catch basins for Outfall 2 (WR-105) (111 mg/kg), Outfall 3 (WR-104) (175 mg/kg), and Outfall 3A (WR-103) (177 mg/kg). PCB concentrations ranged from 9.9 to 19.2 µg/kg in these catch basins. Benzyl butyl phthalate was detected at 7,070 µg/kg in a duplicate sample from catch basin 3. Two surface and two subsurface samples were collected in the vicinity of Outfall 5 (WR-106). Outfall 5 (WR-106) surface samples contained primarily **diesel-range hydrocarbons** at 1,430 to 1,820 mg/kg (1,270 to 1620 mg/kg subsurface sample), low levels of **chlorinated hydrocarbons**, and **elevated metals**. A surface sample collected from Outfall 5 (WR-106) contained concentrations as high as 618 mg/kg copper, 182 mg/kg lead (241 mg/kg lead in subsurface sample), and 739 mg/kg zinc in a subsurface sample. Bis(2-ethylhexyl) phthalate was found at 6,330 and 2,220 µg/kg in the two samples collected from Outfall 5 (WR-106) (CH2M HILL 2002b).

Samples from Outfall 6 (WR-126) contained elevated PAHs, cadmium, copper, and lead. The **LPAH** concentration in the Outfall 6 sediment sample was 39,500 µg/kg, compared with 1,627 µg/kg detected in the closest Weston (1998) sediment sample (SD-030). The **HPAH** concentration in the same sample was 23,640 µg/kg, compared with 4,226 µg/kg from the closest Weston sample (CH2M HILL 2002b).

CH2M HILL (2002a) collected an additional round of sediment/soil samples from the base of Outfall 6 (WR-126) in October 2002, following the operational shutdown in 2001. Concentrations of all analytes were significantly less than the October 2001 sampling event. Follow-up sampling efforts at the catch basins in 2002 were unsuccessful, as no sediment had accumulated due to the regular maintenance of catch basins and the cessation of site operations.

10.3.5. Wastewater Permit

☐ Yes ☐ No

Permit Type	Permit No.	Start Date	Outfalls	Volumes	Parameters/Frequency
Individual NPDES-IW-N	102452	3/22/01 (will expire 12/31/04)	1	Not provided	Suspended solids, turbidity ¹ temperature/daily when outfall is operating
Individual NPDES-IW-N	100097 (Expired 6/30/90)	7/19/85		Not provided	
Individual NPDES-IW-N	100969 (Expired 8/31/97)	9/16/92		Not provided	
Individual NPDES-IW-N	3174 (Expired 2/28/85)	1/1/1901		Not provided	

¹ DEQ lowered the effluent limits for turbidity and total suspended solids, as documented in Modification #1 to the NPDES permit.

10.3.6. Wastewater Data

☒ Yes ☐ No

Conventional parameters are monitored according to permit requirements (see above); however, no chemical data are collected.

10.3.7. Summary

The potential for contaminated stormwater runoff from the Linnton Plywood facility to impact in-water media is significantly less now that operations have ceased. Routine catch basin maintenance and other operational BMPs have been successful in reducing the potential transport of contamination from the site to the river.

10.4. Sediment

10.4.1. River Sediment Data

☒ Yes ☐ No

Sediment sampling in the vicinity of Linnton Plywood and CRSG has been performed during three surveys: Weston (1998), Battelle (2002), and Integral (2004.). Summary results from these investigations are found in Table 2. Weston sampled sediment at three stations (SD035, SD030, SD028; Figure 1) and found concentrations of PAHs and other petroleum constituents, including heavy metals, in three shallow sediment samples and one deeper sample collected adjacent to the Linnton Plywood and CRSG site. As part of their 1997 study of PAH concentrations in Willamette River surface sediment, Battelle (2002) sampled one station (S-029; Figure 1) at Linnton Plywood's downstream property boundary. In October 2002, Round 1 sediment data were collected in the lower Willamette River, including two stations along the shoreline of Linnton Plywood. Station 04B023 was located at the upstream end of the property, and Station 04R004 was situated at the downstream boundary of CRSG, about 200 feet downstream of Outfall 2 (WR-105) (see Figure 1).

10.4.2. Summary

See Final CSM Update.

11. CLEANUP HISTORY AND SOURCE CONTROL MEASURES

11.1. Soil Cleanup/Source Control

Cleanup and source control actions to date include the following:

- Decommissioning of a 5,000-gallon oil UST and removal of 200 cubic yards of contaminated soil from the excavation in 1989.
- Decommissioning of three underground gasoline storage tanks east of boiler house and removal of 80 cubic yards of impacted soil from the excavation in 1994.
- Implementation of a Stormwater Pollution Control Plan for both operations, including installation of sorbent filters and routine removal of sediment from catch basins (CH2M HILL 2001; CRSG 2003).
- Removal of 8 cubic yards of knife-grinding debris near riverbank in May 2003.
- Removal of 10 cubic yards of soil/sediment at base of Outfall 5 (WR-106) in May 2003.
- Removal of an additional 0.5 cubic yard of material beneath Outfall 5 (WR-106) in July 2003.

11.2. Groundwater Cleanup/Source Control

No groundwater source controls have been conducted at the site.

11.3. Other

Unused products and wastes were disposed of offsite after operations ceased in December 2001.

11.4. Potential for Recontamination from Upland Sources

See Final CSM Update.

12. BIBLIOGRAPHY / INFORMATION SOURCES

References cited:

Anderson. 2003. Personal communication (letter of 8/1/03 to T. Martich, EPA, regarding source control decision for Linnton Plywood). Oregon Department of Environmental Quality, Portland, OR.

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- Figure 5-1. Sampling Locations (CH2M HILL 2002a)

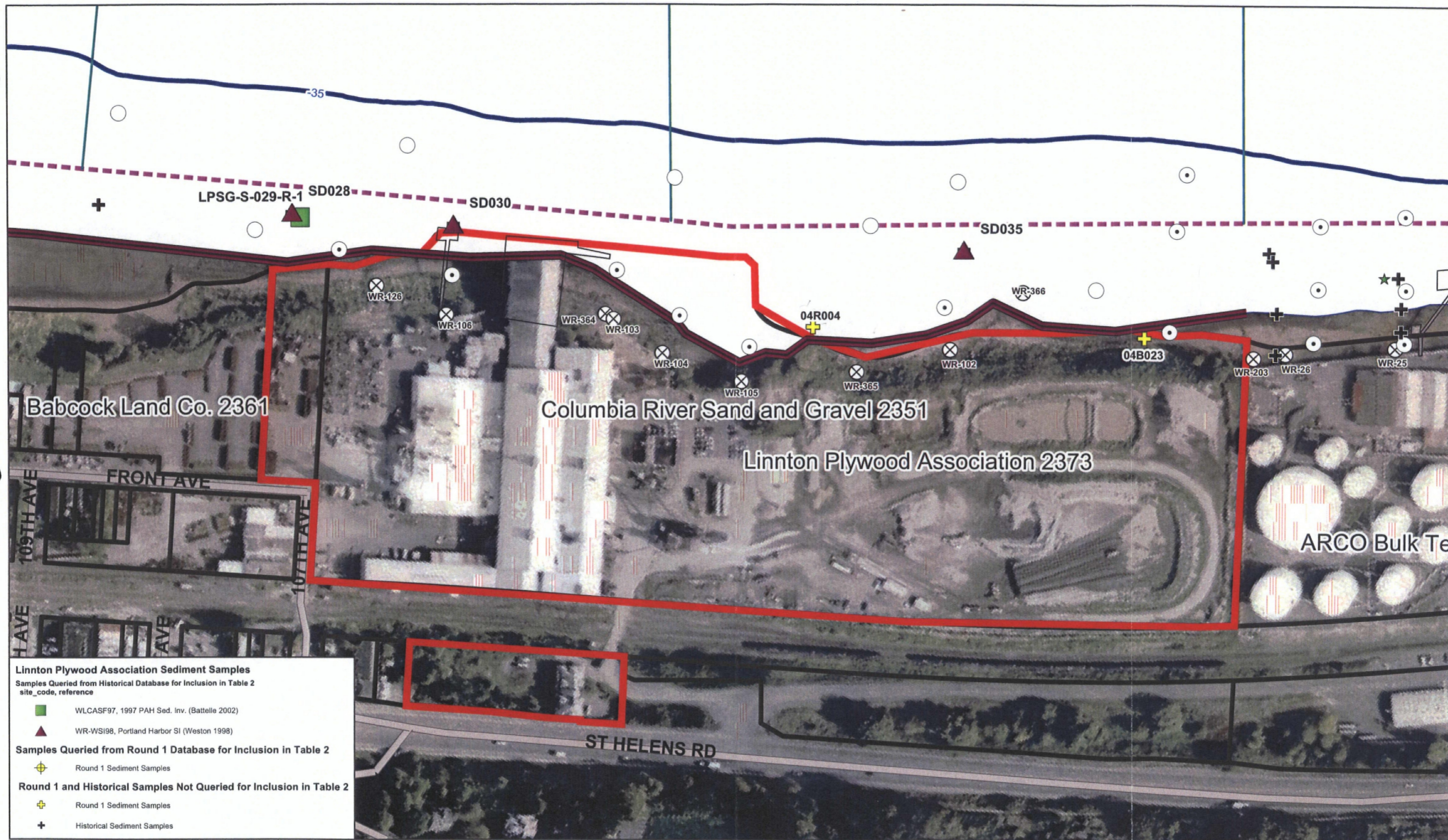
FIGURES

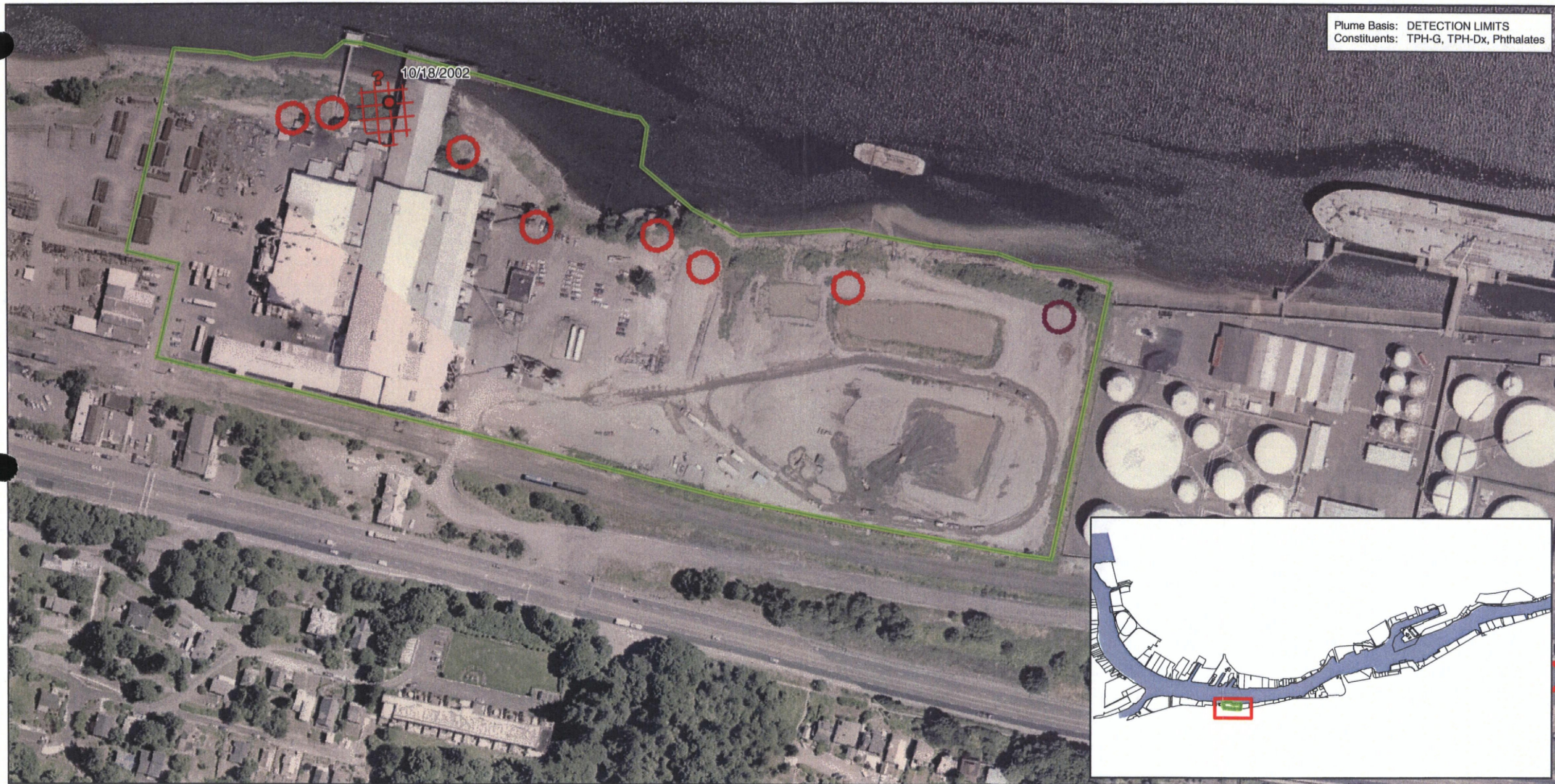
Figure 1. Site Features

Figure 2. Extent of Impacted Groundwater

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Plume Basis: DETECTION LIMITS
Constituents: TPH-G, TPH-Dx, Phthalates

0 150 300 Feet

FEATURE SOURCES:
Transportation, Water, Property, Zoning or Boundaries: Metro RLIS.
ECSI site locations were summarized in December, 2002
and January, 2003 from ODEQ ECSI files.

Map Creation Date: August 11, 2004

File Name: Fig2_LinntonPly_SummryMap.mxd

LEGEND

- Site boundary
- Maximum Detection Location
- Contaminant Type**
 - Petroleum related
 - SVOC (bis(2-ethylhexyl)phthalate)

Extent of Impacted Groundwater

For details, refer to plume interpretation table in CSM document.

- Single or isolated detection of COI's.
Extent or continuity of impacted groundwater between sample points is uncertain. Color based on contaminant type.
- Estimated extent of impacted groundwater area.
Color based on contaminant type.

Figure 2
Portland Harbor RI/FS
Linnton Plywood (Columbia
River Sand and Gravel) Upland
Groundwater Quality Overview

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TABLES

Table 1. Potential Sources and Transport Pathways Assessment

Table 2. Queried Sediment Chemistry Data

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Linnton Plywood #2373

Table 1. Potential Sources and Transport Pathways Assessment

Last Updated: March 4, 2005

[illegible]

Notes:

All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

Blank = Source, COI and historic and current pathways have been investigated and shown to be not present or incomplete.

UST Underground storage tank

AST Above-ground storage tank

TPH Total petroleum hydrocarbons

VOCs Volatile organic compounds

SVOCs Semivolatile organic compounds

PAHs Polycyclic aromatic hydrocarbons

BTEX Benzene, toluene, ethylbenzene, and xylenes

PCBs Polychlorinated biphenols

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Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte & Units	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	Aroclor 1016 (ug/kg)	1	0	0						19 U	19 U	19	19 U	19 U
surface	Aroclor 1242 (ug/kg)	1	0	0						19 U	19 U	19	19 U	19 U
surface	Aroclor 1248 (ug/kg)	1	0	0						19 U	19 U	19	19 U	19 U
surface	Aroclor 1254 (ug/kg)	1	0	0						19 U	19 U	19	19 U	19 U
surface	Aroclor 1260 (ug/kg)	1	0	0						19 U	19 U	19	19 U	19 U
surface	Aroclor 1221 (ug/kg)	1	0	0						38 U	38 U	38	38 U	38 U
surface	Aroclor 1232 (ug/kg)	1	0	0						19 U	19 U	19	19 U	19 U
surface	Polychlorinated biphenyl (ug/kg)	1	0	0						38 UA	38 UA	38	38 UA	38 UA
surface	Butyltin ion (ug/kg)	1	0	0						5.7 U	5.7 U	5.7	5.7 U	5.7 U
surface	Butyltin ion (ug/l)	1	0	0						0.06 U	0.06 U	0.06	0.06 U	0.06 U
surface	Dibutyltin ion (ug/kg)	1	0	0						5.7 U	5.7 U	5.7	5.7 U	5.7 U
surface	Dibutyltin ion (ug/l)	1	0	0						0.06 U	0.06 U	0.06	0.06 U	0.06 U
2.3 surface	Tributyltin ion (ug/kg)	1	1	100	14	14	14	14	14	14	14	14	14	14
surface	Tributyltin ion (ug/l)	1	0	0						0.02 U	0.02 U	0.02	0.02 U	0.02 U
surface	Tetrabutyltin (ug/kg)	1	0	0						5.7 U	5.7 U	5.7	5.7 U	5.7 U
surface	Tetrabutyltin (ug/l)	1	0	0						0.02 U	0.02 U	0.02	0.02 U	0.02 U
surface	Total organic carbon (%)	4	4	100	1.2	2	1.43	1.2	1.3	1.2	2	1.43	1.2	1.3
surface	Gravel (%)	4	4	100		1.27	0.398	0.14	0.18	0	1.27	0.398	0.14	0.18
surface	Sand (%)	3	3	100	24.82	27.77	26.4	26.51	26.51	24.82	27.77	26.4	26.51	26.51
surface	Very coarse sand (%)	1	1	100	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
surface	Coarse sand (%)	1	1	100	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
surface	Medium sand (%)	1	1	100	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
surface	Fine sand (%)	1	1	100	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
surface	Very fine sand (%)	1	1	100	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
surface	Fines (%)	3	3	100	70.96	75.04	73.1	73.31	73.31	70.96	75.04	73.1	73.31	73.31
surface	Silt (%)	3	3	100	59.92	67.46	63.9	64.21	64.21	59.92	67.46	63.9	64.21	64.21
surface	Coarse silt (%)	1	1	100	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8
surface	Medium silt (%)	1	1	100	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
surface	Fine silt (%)	1	1	100	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
surface	Very fine silt (%)	1	1	100	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
surface	Clay (%)	3	3	100	7.58	11.04	9.24	9.1	9.1	7.58	11.04	9.24	9.1	9.1
surface	8-9 Phi clay (%)	1	1	100	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
surface	9-10 Phi clay (%)	1	1	100	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
surface	>10 Phi clay (%)	1	1	100	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
surface	Aluminum (mg/kg)	3	3	100	36900	41000	39100	39400	39400	36900	41000	39100	39400	39400
surface	Aluminum (mg/l)	1	1	100	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
surface	Antimony (mg/kg)	3	2	66.7	5 J	6 J	5.5	5 J	5 J	5 J	6 J	5.33	5 UJ	5 UJ
surface	Antimony (mg/l)	1	0	0						0.05 U	0.05 U	0.05	0.05 U	0.05 U
7 surface	Arsenic (mg/kg)	3	1	33.3	5	5	5	5	5	5 U	5 U	5	5	5
surface	Arsenic (mg/l)	1	1	100	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008
4.98 surface	Cadmium (mg/kg)	3	3	100	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
surface	Cadmium (mg/l)	1	0	0						0.002 U	0.002 U	0.002	0.002 U	0.002 U

Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte & Units	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
111 surface	Chromium (mg/kg)	3	3	100	35.9	38	36.6	36	36	35.9	38	36.6	36	36
surface	Chromium (mg/l)	1	0	0						0.005 U	0.005 U	0.005	0.005 U	0.005 U
149 surface	Copper (mg/kg)	3	3	100	40.9	43.8	41.9	41	41	40.9	43.8	41.9	41	41
surface	Copper (mg/l)	1	0	0						0.002 U	0.002 U	0.002	0.002 U	0.002 U
17 surface	Lead (mg/kg)	3	3	100	9	9	9	9	9	9	9	9	9	9
surface	Lead (mg/l)	1	0	0						0.001 U	0.001 U	0.001	0.001 U	0.001 U
1,100 surface	Manganese (mg/kg)	3	3	100	662	763	716	723	723	662	763	716	723	723
surface	Manganese (mg/l)	1	1	100	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9
0.07 surface	Mercury (mg/kg)	3	3	100	0.05	0.06	0.0567	0.06	0.06	0.05	0.06	0.0567	0.06	0.06
surface	Mercury (mg/l)	1	0	0						0.0001 U	0.0001 U	0.0001	0.0001 U	0.0001 U
4816 surface	Nickel (mg/kg)	3	3	100	26.9	29	27.9	27.9	27.9	26.9	29	27.9	27.9	27.9
surface	Nickel (mg/l)	1	0	0						0.01 U	0.01 U	0.01	0.01 U	0.01 U
5 surface	Selenium (mg/kg)	3	0	0						5 U	5 U	5	5 U	5 U
surface	Selenium (mg/l)	1	0	0						0.001 U	0.001 U	0.001	0.001 U	0.001 U
5 surface	Silver (mg/kg)	3	3	100	0.4	1	0.633	0.5	0.5	0.4	1	0.633	0.5	0.5
surface	Silver (mg/l)	1	0	0						0.0002 U	0.0002 U	0.0002	0.0002 U	0.0002 U
surface	Thallium (mg/kg)	3	3	100	9	11	10	10	10	9	11	10	10	10
surface	Thallium (mg/l)	1	0	0						0.001 U	0.001 U	0.001	0.001 U	0.001 U
459 surface	Zinc (mg/kg)	3	3	100	88.2	91	90	90.9	90.9	88.2	91	90	90.9	90.9
surface	Zinc (mg/l)	1	0	0						0.004 U	0.004 U	0.004	0.004 U	0.004 U
surface	Barium (mg/kg)	3	3	100	174	183	180	182	182	174	183	180	182	182
surface	Barium (mg/l)	1	1	100	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.124
surface	Beryllium (mg/kg)	3	3	100	0.62	0.7	0.667	0.68	0.68	0.62	0.7	0.667	0.68	0.68
surface	Beryllium (mg/l)	1	0	0						0.001 U	0.001 U	0.001	0.001 U	0.001 U
surface	Calcium (mg/kg)	3	3	100	8210	8590	8390	8370	8370	8210	8590	8390	8370	8370
surface	Calcium (mg/l)	1	1	100	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9	76.9
surface	Cobalt (mg/kg)	3	3	100	17.4	18.7	18	17.9	17.9	17.4	18.7	18	17.9	17.9
surface	Cobalt (mg/l)	1	1	100	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011
surface	Iron (mg/kg)	3	3	100	38900	42100	40300	39900	39900	38900	42100	40300	39900	39900
surface	Iron (mg/l)	1	1	100	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9
surface	Magnesium (mg/kg)	3	3	100	6700	7220	6960	6960	6960	6700	7220	6960	6960	6960
surface	Magnesium (mg/l)	1	1	100	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3	24.3
surface	Potassium (mg/kg)	3	3	100	1230	1320	1280	1290	1290	1230	1320	1280	1290	1290
surface	Potassium (mg/l)	1	1	100	4	4	4	4	4	4	4	4	4	4
surface	Sodium (mg/kg)	3	3	100	1070	1150	1120	1130	1130	1070	1150	1120	1130	1130
surface	Sodium (mg/l)	1	1	100	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1
surface	Titanium (mg/kg)	1	1	100	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040
surface	Vanadium (mg/kg)	3	3	100	99.1	110	103	101	101	99.1	110	103	101	101
surface	Vanadium (mg/l)	1	1	100	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
surface	2-Methylnaphthalene (ug/kg)	3	1	33.3	46	46	46	46	46	19 U	46	28.3	20 U	20 U
surface	Acenaphthene (ug/kg)	4	4	100	13	170	65.5	29 N	50	13	170	65.5	29 N	50
surface	Acenaphthylene (ug/kg)	4	1	25	10	10	10	10	10	10	20 U	17	19 U	19 U

Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte & Units	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	Anthracene (ug/kg)	4	4	100	25	130	53.8	25	35	25	130	53.8	25	35
surface	Fluorene (ug/kg)	4	4	100	16	170	65.8	26	51	16	170	65.8	26	51
surface	Naphthalene (ug/kg)	4	4	100	20	57	31.5	23	26	20	57	31.5	23	26
surface	Phenanthrene (ug/kg)	4	4	100	112	1100	391	130	220	112	1100	391	130	220
surface	Low Molecular Weight PAH (ug/kg)	4	4	100	201 A	1627 A	602	202 A	379 A	201 A	1627 A	602	202 A	379 A
surface	Dibenz(a,h)anthracene (ug/kg)	4	1	25	14	14	14	14	14	14	20 U	18	19 U	19 U
surface	Benz(a)anthracene (ug/kg)	4	4	100	74	280	126	74	75	74	280	126	74	75
surface	Benzo(a)pyrene (ug/kg)	4	4	100	78	180	117	101	110	78	180	117	101	110
surface	Benzo(b)fluoranthene (ug/kg)	4	4	100	80	270	131	83	89	80	270	131	83	89
surface	Benzo(g,h,i)perylene (ug/kg)	4	4	100	36	84	64.8	62	77	36	84	64.8	62	77
surface	Benzo(k)fluoranthene (ug/kg)	3	3	100	58	240	126	80	80	58	240	126	80	80
surface	Chrysene (ug/kg)	4	4	100	92	400	178	100	120	92	400	178	100	120
surface	Fluoranthene (ug/kg)	4	4	100	120	1400	478	180	210	120	1400	478	180	210
surface	Indeno(1,2,3-cd)pyrene (ug/kg)	4	4	100	61	94	77.8	76	80	61	94	77.8	76	80
surface	Pyrene (ug/kg)	4	4	100	183	1300	473	200	210	183	1300	473	200	210
surface	Benzo(b+k)fluoranthene (ug/kg)	3	3	100	138 A	510 A	270	163 A	163 A	138 A	510 A	270	163 A	163 A
surface	Benzo(j+k)fluoranthene (ug/kg)	1	1	100	86	86	86	86	86	86	86	86	86	86
surface	High Molecular Weight PAH (ug/kg)	4	4	100	912 A	4226 A	1760	927 A	992 A	912 A	4226 A	1760	927 A	992 A
surface	Polycyclic Aromatic Hydrocarbons (ug/kg)	4	4	100	1113 A	5853 A	2370	1194 A	1306 A	1113 A	5853 A	2370	1194 A	1306 A
surface	Benzo(e)pyrene (ug/kg)	1	1	100	75	75	75	75	75	75	75	75	75	75
surface	C1-Dibenzothiophene (ug/kg)	1	1	100	10	10	10	10	10	10	10	10	10	10
surface	C1-Chrysene (ug/kg)	1	1	100	78	78	78	78	78	78	78	78	78	78
surface	C1-Fluorene (ug/kg)	1	1	100	8	8	8	8	8	8	8	8	8	8
surface	C1-Naphthalene (ug/kg)	1	1	100	10	10	10	10	10	10	10	10	10	10
surface	C1-Fluoranthene/pyrene (ug/kg)	1	1	100	86	86	86	86	86	86	86	86	86	86
surface	C1-Phenanthrene/anthracene (ug/kg)	1	1	100	43	43	43	43	43	43	43	43	43	43
surface	C2-Dibenzothiophene (ug/kg)	1	1	100	14	14	14	14	14	14	14	14	14	14
surface	C2-Chrysene (ug/kg)	1	1	100	32	32	32	32	32	32	32	32	32	32
surface	C2-Fluorene (ug/kg)	1	1	100	14	14	14	14	14	14	14	14	14	14
surface	C2-Naphthalene (ug/kg)	1	1	100	17	17	17	17	17	17	17	17	17	17
surface	C2-Fluoranthene/pyrene (ug/kg)	1	1	100	43	43	43	43	43	43	43	43	43	43
surface	C2-Phenanthrene/anthracene (ug/kg)	1	1	100	55	55	55	55	55	55	55	55	55	55
surface	C3-Dibenzothiophene (ug/kg)	1	1	100	19	19	19	19	19	19	19	19	19	19
surface	C3-Chrysene (ug/kg)	1	1	100	20	20	20	20	20	20	20	20	20	20
surface	C3-Fluorene (ug/kg)	1	1	100	24	24	24	24	24	24	24	24	24	24
surface	C3-Naphthalene (ug/kg)	1	1	100	19	19	19	19	19	19	19	19	19	19
surface	C3-Fluoranthene/pyrene (ug/kg)	1	1	100	28	28	28	28	28	28	28	28	28	28
surface	C3-Phenanthrene/anthracene (ug/kg)	1	1	100	54	54	54	54	54	54	54	54	54	54
surface	C4-Dibenzothiophene (ug/kg)	1	1	100	18	18	18	18	18	18	18	18	18	18
surface	C4-Chrysene (ug/kg)	1	1	100	7	7	7	7	7	7	7	7	7	7
surface	C4-Naphthalene (ug/kg)	1	1	100	15	15	15	15	15	15	15	15	15	15
surface	C4-Phenanthrene/anthracene (ug/kg)	1	1	100	23	23	23	23	23	23	23	23	23	23

Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte & Units	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	Total benzofluoranthenes (b+k (+j)) (ug/kg)	1	1	100	175	175	175	175	175	175	175	175	175	175
surface	4,4'-DDD (ug/kg)	1	1	100	1.1 J	1.1 J	1.1	1.1 J	1.1 J	1.1 J	1.1 J	1.1	1.1 J	1.1 J
surface	4,4'-DDE (ug/kg)	1	1	100	1.4 J	1.4 J	1.4	1.4 J	1.4 J	1.4 J	1.4 J	1.4	1.4 J	1.4 J
surface	4,4'-DDT (ug/kg)	1	1	100	1.4 J	1.4 J	1.4	1.4 J	1.4 J	1.4 J	1.4 J	1.4	1.4 J	1.4 J
surface	Total of 3 isomers: pp-DDT,-DDD,-DDE (ug/kg)	1	1	100	3.9 A	3.9 A	3.9	3.9 A	3.9 A	3.9 A	3.9 A	3.9	3.9 A	3.9 A
surface	Aldrin (ug/kg)	1	0	0						0.95 U	0.95 U	0.95	0.95 U	0.95 U
surface	alpha-Hexachlorocyclohexane (ug/kg)	1	0	0						0.95 U	0.95 U	0.95	0.95 U	0.95 U
surface	beta-Hexachlorocyclohexane (ug/kg)	1	0	0						0.95 U	0.95 U	0.95	0.95 U	0.95 U
surface	delta-Hexachlorocyclohexane (ug/kg)	1	0	0						3 UI	3 UI	3	3 UI	3 UI
surface	gamma-Hexachlorocyclohexane (ug/kg)	1	0	0						0.95 U	0.95 U	0.95	0.95 U	0.95 U
surface	cis-Chlordane (ug/kg)	1	0	0						0.95 U	0.95 U	0.95	0.95 U	0.95 U
surface	Dieldrin (ug/kg)	1	0	0						1.9 U	1.9 U	1.9	1.9 U	1.9 U
surface	alpha-Endosulfan (ug/kg)	1	0	0						0.95 U	0.95 U	0.95	0.95 U	0.95 U
surface	beta-Endosulfan (ug/kg)	1	0	0						1.9 U	1.9 U	1.9	1.9 U	1.9 U
surface	Endosulfan sulfate (ug/kg)	1	0	0						1.9 U	1.9 U	1.9	1.9 U	1.9 U
surface	Endrin (ug/kg)	1	0	0						1.9 U	1.9 U	1.9	1.9 U	1.9 U
surface	Endrin aldehyde (ug/kg)	1	0	0						1.9 U	1.9 U	1.9	1.9 U	1.9 U
surface	Endrin ketone (ug/kg)	1	0	0						1.9 U	1.9 U	1.9	1.9 U	1.9 U
surface	Heptachlor (ug/kg)	1	0	0						0.95 U	0.95 U	0.95	0.95 U	0.95 U
surface	Heptachlor epoxide (ug/kg)	1	0	0						0.95 U	0.95 U	0.95	0.95 U	0.95 U
surface	Methoxychlor (ug/kg)	1	0	0						9.5 U	9.5 U	9.5	9.5 U	9.5 U
surface	Toxaphene (ug/kg)	1	0	0						95 U	95 U	95	95 U	95 U
surface	gamma-Chlordane (ug/kg)	1	0	0						0.95 U	0.95 U	0.95	0.95 U	0.95 U
surface	Diphenyl (ug/kg)	1	1	100	5	5	5	5	5	5	5	5	5	5
surface	2,4,5-Trichlorophenol (ug/kg)	3	0	0						95 U	98 U	96.7	97 U	97 U
surface	2,4,6-Trichlorophenol (ug/kg)	3	0	0						95 U	98 U	96.7	97 U	97 U
surface	2,4-Dichlorophenol (ug/kg)	3	0	0						57 U	59 U	58	58 U	58 U
surface	2,4-Dimethylphenol (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	2,4-Dinitrophenol (ug/kg)	3	0	0						190 UJ	200 UJ	193	190 UJ	190 UJ
surface	2-Chlorophenol (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	2-Methylphenol (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	2-Nitrophenol (ug/kg)	3	0	0						95 U	98 U	96.7	97 U	97 U
surface	4,6-Dinitro-2-methylphenol (ug/kg)	3	0	0						190 U	200 U	193	190 U	190 U
surface	4-Chloro-3-methylphenol (ug/kg)	3	0	0						38 U	39 U	38.7	39 U	39 U
surface	4-Methylphenol (ug/kg)	3	1	33.3	21	21	21	21	21	19 U	21	20	20 U	20 U
surface	4-Nitrophenol (ug/kg)	3	0	0						95 U	98 U	96.7	97 U	97 U
surface	Pentachlorophenol (ug/kg)	3	0	0						95 U	98 U	96.7	97 U	97 U
surface	Phenol (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	Dimethyl phthalate (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	Diethyl phthalate (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	Dibutyl phthalate (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	Butylbenzyl phthalate (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U

Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte & Units	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	Di-n-octyl phthalate (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	Bis(2-ethylhexyl) phthalate (ug/kg)	3	0	0						100 UJ	110 UJ	107	110 UJ	110 UJ
surface	Bis(2-chloro-1-methylethyl) ether (ug/kg)	3	0	0						19 U	20 U	19.3	19 UJ	19 UJ
surface	2,4-Dinitrotoluene (ug/kg)	3	0	0						95 U	98 U	96.7	97 U	97 U
surface	2,6-Dinitrotoluene (ug/kg)	3	0	0						95 U	98 U	96.7	97 U	97 U
surface	2-Chloronaphthalene (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	2-Nitroaniline (ug/kg)	3	0	0						95 U	98 U	96.7	97 U	97 U
surface	3,3'-Dichlorobenzidine (ug/kg)	3	0	0						95 U	98 U	96.7	97 U	97 U
surface	3-Nitroaniline (ug/kg)	3	0	0						110 U	120 U	117	120 U	120 U
surface	4-Bromophenyl phenyl ether (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	4-Chloroaniline (ug/kg)	3	0	0						57 U	59 U	58	58 U	58 U
surface	4-Chlorophenyl phenyl ether (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	4-Nitroaniline (ug/kg)	3	0	0						95 U	98 U	96.7	97 U	97 U
surface	Benzoic acid (ug/kg)	3	0	0						190 U	200 U	193	190 U	190 U
surface	Benzyl alcohol (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	Bis(2-chloroethoxy) methane (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	Bis(2-chloroethyl) ether (ug/kg)	3	0	0						38 U	39 U	38.7	39 U	39 U
surface	Carbazole (ug/kg)	3	1	33.3	37	37	37	37	37	19 U	37	25.3	20 U	20 U
surface	Dibenzofuran (ug/kg)	4	3	75	8	110	48.7	28	28	8	110	41.3	19 U	28
surface	Hexachlorobenzene (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	Hexachlorobutadiene (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	Hexachlorocyclopentadiene (ug/kg)	3	0	0						95 U	98 U	96.7	97 U	97 U
surface	Hexachloroethane (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	Isophorone (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	Nitrobenzene (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	N-Nitrosodipropylamine (ug/kg)	3	0	0						38 U	39 U	38.7	39 U	39 U
surface	N-Nitrosodiphenylamine (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	Dibenzothiophene (ug/kg)	1	1	100	9	9	9	9	9	9	9	9	9	9
surface	Perylene (ug/kg)	1	1	100	83	83	83	83	83	83	83	83	83	83
surface	1,2-Dichlorobenzene (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	1,3-Dichlorobenzene (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	1,4-Dichlorobenzene (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
surface	1,2,4-Trichlorobenzene (ug/kg)	3	0	0						19 U	20 U	19.3	19 U	19 U
subsurface	Aroclor 1016 (ug/kg)	1	0	0						19 UJ	19 UJ	19	19 UJ	19 UJ
subsurface	Aroclor 1242 (ug/kg)	1	0	0						19 UJ	19 UJ	19	19 UJ	19 UJ
subsurface	Aroclor 1248 (ug/kg)	1	0	0						19 UJ	19 UJ	19	19 UJ	19 UJ
subsurface	Aroclor 1254 (ug/kg)	1	0	0						78 UJ	78 UJ	78	78 UJ	78 UJ
subsurface	Aroclor 1260 (ug/kg)	1	0	0						78 UJ	78 UJ	78	78 UJ	78 UJ
subsurface	Aroclor 1221 (ug/kg)	1	0	0						39 UJ	39 UJ	39	39 UJ	39 UJ
subsurface	Aroclor 1232 (ug/kg)	1	0	0						19 UJ	19 UJ	19	19 UJ	19 UJ
subsurface	Polychlorinated biphenyl (ug/kg)	1	0	0						78 UA	78 UA	78	78 UA	78 UA
subsurface	Butyltin ion (ug/kg)	1	0	0						19 U	19 U	19	19 U	19 U

Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte & Units	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
subsurface	Dibutyltin ion (ug/kg)	1	0	0						19 U	19 U	19	19 U	19 U
subsurface	Tributyltin ion (ug/kg)	1	0	0						19 U	19 U	19	19 U	19 U
subsurface	Tetrabutyltin (ug/kg)	1	0	0						19 U	19 U	19	19 U	19 U
subsurface	Total organic carbon (%)	1	1	100	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
subsurface	Gravel (%)	1	1	100	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
subsurface	Sand (%)	1	1	100	22.98	22.98	23	22.98	22.98	22.98	22.98	23	22.98	22.98
subsurface	Fines (%)	1	1	100	76.54	76.54	76.5	76.54	76.54	76.54	76.54	76.5	76.54	76.54
subsurface	Silt (%)	1	1	100	58.57	58.57	58.6	58.57	58.57	58.57	58.57	58.6	58.57	58.57
subsurface	Clay (%)	1	1	100	17.97	17.97	18	17.97	17.97	17.97	17.97	18	17.97	17.97
subsurface	Aluminum (mg/kg)	1	1	100	40800	40800	40800	40800	40800	40800	40800	40800	40800	40800
subsurface	Antimony (mg/kg)	1	0	0						5 UJ	5 UJ	5	5 UJ	5 UJ
subsurface	Arsenic (mg/kg)	1	0	0						5 U	5 U	5	5 U	5 U
subsurface	Cadmium (mg/kg)	1	1	100	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
subsurface	Chromium (mg/kg)	1	1	100	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2
subsurface	Copper (mg/kg)	1	1	100	47	47	47	47	47	47	47	47	47	47
subsurface	Lead (mg/kg)	1	1	100	26	26	26	26	26	26	26	26	26	26
subsurface	Manganese (mg/kg)	1	1	100	619	619	619	619	619	619	619	619	619	619
subsurface	Mercury (mg/kg)	1	1	100	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
subsurface	Nickel (mg/kg)	1	1	100	30	30	30	30	30	30	30	30	30	30
subsurface	Selenium (mg/kg)	1	1	100	11	11	11	11	11	11	11	11	11	11
subsurface	Silver (mg/kg)	1	1	100	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
subsurface	Thallium (mg/kg)	1	0	0						5 U	5 U	5	5 U	5 U
subsurface	Zinc (mg/kg)	1	1	100	144	144	144	144	144	144	144	144	144	144
subsurface	Barium (mg/kg)	1	1	100	189	189	189	189	189	189	189	189	189	189
subsurface	Beryllium (mg/kg)	1	1	100	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
subsurface	Calcium (mg/kg)	1	1	100	8300	8300	8300	8300	8300	8300	8300	8300	8300	8300
subsurface	Cobalt (mg/kg)	1	1	100	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
subsurface	Iron (mg/kg)	1	1	100	41100	41100	41100	41100	41100	41100	41100	41100	41100	41100
subsurface	Magnesium (mg/kg)	1	1	100	6760	6760	6760	6760	6760	6760	6760	6760	6760	6760
subsurface	Potassium (mg/kg)	1	1	100	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330
subsurface	Sodium (mg/kg)	1	1	100	1130 J	1130 J	1130	1130 J	1130 J	1130 J	1130 J	1130	1130 J	1130 J
subsurface	Titanium (mg/kg)	1	1	100	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960
subsurface	Vanadium (mg/kg)	1	1	100	103	103	103	103	103	103	103	103	103	103
subsurface	2-Methylnaphthalene (ug/kg)	1	1	100	860	860	860	860	860	860	860	860	860	860
subsurface	Acenaphthene (ug/kg)	1	1	100	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400
subsurface	Acenaphthylene (ug/kg)	1	1	100	490	490	490	490	490	490	490	490	490	490
subsurface	Anthracene (ug/kg)	1	1	100	7800	7800	7800	7800	7800	7800	7800	7800	7800	7800
subsurface	Fluorene (ug/kg)	1	1	100	4600	4600	4600	4600	4600	4600	4600	4600	4600	4600
subsurface	Naphthalene (ug/kg)	1	1	100	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
subsurface	Phenanthrene (ug/kg)	1	1	100	42000	42000	42000	42000	42000	42000	42000	42000	42000	42000
subsurface	Low Molecular Weight PAH (ug/kg)	1	1	100	62190 A	62190 A	62200	62190 A	62190 A	62190 A	62190 A	62200	62190 A	62190 A
subsurface	Dibenz(a,h)anthracene (ug/kg)	1	1	100	2100	2100	2100	2100	2100	2100	2100	2100	2100	2100

Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte & Units	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
subsurface	Benz(a)anthracene (ug/kg)	1	1	100	9900	9900	9900	9900	9900	9900	9900	9900	9900	9900
subsurface	Benzo(a)pyrene (ug/kg)	1	1	100	13000	13000	13000	13000	13000	13000	13000	13000	13000	13000
subsurface	Benzo(b)fluoranthene (ug/kg)	1	1	100	7600	7600	7600	7600	7600	7600	7600	7600	7600	7600
subsurface	Benzo(g,h,i)perylene (ug/kg)	1	1	100	13000	13000	13000	13000	13000	13000	13000	13000	13000	13000
subsurface	Benzo(k)fluoranthene (ug/kg)	1	1	100	5400	5400	5400	5400	5400	5400	5400	5400	5400	5400
subsurface	Chrysene (ug/kg)	1	1	100	11000	11000	11000	11000	11000	11000	11000	11000	11000	11000
subsurface	Fluoranthene (ug/kg)	1	1	100	34000	34000	34000	34000	34000	34000	34000	34000	34000	34000
subsurface	Indeno(1,2,3-cd)pyrene (ug/kg)	1	1	100	8700	8700	8700	8700	8700	8700	8700	8700	8700	8700
subsurface	Pyrene (ug/kg)	1	1	100	48000	48000	48000	48000	48000	48000	48000	48000	48000	48000
subsurface	Benzo(b+k)fluoranthene (ug/kg)	1	1	100	13000 A	13000 A	13000	13000 A	13000 A	13000 A	13000 A	13000	13000 A	13000 A
subsurface	High Molecular Weight PAH (ug/kg)	1	1	100	152700 A	152700 A	153000	152700 A	152700 A	152700 A	152700 A	153000	152700 A	152700 A
subsurface	Polycyclic Aromatic Hydrocarbons (ug/kg)	1	1	100	214890 A	214890 A	215000	214890 A	214890 A	214890 A	214890 A	215000	214890 A	214890 A
subsurface	4,4'-DDD (ug/kg)	1	1	100	23 J	23 J	23	23 J	23 J	23 J	23 J	23	23 J	23 J
subsurface	4,4'-DDE (ug/kg)	1	0	0						7.1 UIJ	7.1 UIJ	7.1	7.1 UIJ	7.1 UIJ
subsurface	4,4'-DDT (ug/kg)	1	1	100	18 J	18 J	18	18 J	18 J	18 J	18 J	18	18 J	18 J
subsurface	Total of 3 isomers: pp-DDT,-DDD,-DDE (ug/kg)	1	1	100	41 A	41 A	41	41 A	41 A	41 A	41 A	41	41 A	41 A
subsurface	Aldrin (ug/kg)	1	0	0						0.97 UJ	0.97 UJ	0.97	0.97 UJ	0.97 UJ
subsurface	alpha-Hexachlorocyclohexane (ug/kg)	1	0	0						0.97 UJ	0.97 UJ	0.97	0.97 UJ	0.97 UJ
subsurface	beta-Hexachlorocyclohexane (ug/kg)	1	0	0						0.97 UJ	0.97 UJ	0.97	0.97 UJ	0.97 UJ
subsurface	delta-Hexachlorocyclohexane (ug/kg)	1	0	0						0.97 UJ	0.97 UJ	0.97	0.97 UJ	0.97 UJ
subsurface	gamma-Hexachlorocyclohexane (ug/kg)	1	0	0						0.97 UJ	0.97 UJ	0.97	0.97 UJ	0.97 UJ
subsurface	cis-Chlordane (ug/kg)	1	0	0						0.97 UJ	0.97 UJ	0.97	0.97 UJ	0.97 UJ
subsurface	Dieldrin (ug/kg)	1	0	0						1.9 UJ	1.9 UJ	1.9	1.9 UJ	1.9 UJ
subsurface	alpha-Endosulfan (ug/kg)	1	0	0						0.97 UJ	0.97 UJ	0.97	0.97 UJ	0.97 UJ
subsurface	beta-Endosulfan (ug/kg)	1	0	0						1.9 UJ	1.9 UJ	1.9	1.9 UJ	1.9 UJ
subsurface	Endosulfan sulfate (ug/kg)	1	0	0						1.9 UJ	1.9 UJ	1.9	1.9 UJ	1.9 UJ
subsurface	Endrin (ug/kg)	1	0	0						1.9 UJ	1.9 UJ	1.9	1.9 UJ	1.9 UJ
subsurface	Endrin aldehyde (ug/kg)	1	0	0						1.9 UJ	1.9 UJ	1.9	1.9 UJ	1.9 UJ
subsurface	Endrin ketone (ug/kg)	1	0	0						1.9 UJ	1.9 UJ	1.9	1.9 UJ	1.9 UJ
subsurface	Heptachlor (ug/kg)	1	0	0						0.97 UJ	0.97 UJ	0.97	0.97 UJ	0.97 UJ
subsurface	Heptachlor epoxide (ug/kg)	1	0	0						0.97 UJ	0.97 UJ	0.97	0.97 UJ	0.97 UJ
subsurface	Methoxychlor (ug/kg)	1	0	0						23 UIJ	23 UIJ	23	23 UIJ	23 UIJ
subsurface	Toxaphene (ug/kg)	1	0	0						97 UJ	97 UJ	97	97 UJ	97 UJ
subsurface	gamma-Chlordane (ug/kg)	1	0	0						0.97 UJ	0.97 UJ	0.97	0.97 UJ	0.97 UJ
subsurface	2,4,5-Trichlorophenol (ug/kg)	1	0	0						640 U	640 U	640	640 U	640 U
subsurface	2,4,6-Trichlorophenol (ug/kg)	1	0	0						640 U	640 U	640	640 U	640 U
subsurface	2,4-Dichlorophenol (ug/kg)	1	0	0						390 U	390 U	390	390 U	390 U
subsurface	2,4-Dimethylphenol (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	2,4-Dinitrophenol (ug/kg)	1	0	0						1300 UJ	1300 UJ	1300	1300 UJ	1300 UJ
subsurface	2-Chlorophenol (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	2-Methylphenol (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	2-Nitrophenol (ug/kg)	1	0	0						640 U	640 U	640	640 U	640 U

Table 2. Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte & Units	Number of Samples	Number Detected	%	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
subsurface	4,6-Dinitro-2-methylphenol (ug/kg)	1	0	0						1300 UJ	1300 UJ	1300	1300 UJ	1300 UJ
subsurface	4-Chloro-3-methylphenol (ug/kg)	1	0	0						260 U	260 U	260	260 U	260 U
subsurface	4-Methylphenol (ug/kg)	1	1	100	160	160	160	160	160	160	160	160	160	160
subsurface	4-Nitrophenol (ug/kg)	1	0	0						640 U	640 U	640	640 U	640 U
subsurface	Phenol (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	Dimethyl phthalate (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	Diethyl phthalate (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	Dibutyl phthalate (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	Butylbenzyl phthalate (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	Di-n-octyl phthalate (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	Bis(2-ethylhexyl) phthalate (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	Bis(2-chloro-1-methylethyl) ether (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	2,4-Dinitrotoluene (ug/kg)	1	0	0						640 U	640 U	640	640 U	640 U
subsurface	2,6-Dinitrotoluene (ug/kg)	1	0	0						640 U	640 U	640	640 U	640 U
subsurface	2-Chloronaphthalene (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	2-Nitroaniline (ug/kg)	1	0	0						640 U	640 U	640	640 U	640 U
subsurface	3,3'-Dichlorobenzidine (ug/kg)	1	0	0						640 U	640 U	640	640 U	640 U
subsurface	3-Nitroaniline (ug/kg)	1	0	0						770 UJ	770 UJ	770	770 UJ	770 UJ
subsurface	4-Bromophenyl phenyl ether (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	4-Chloroaniline (ug/kg)	1	0	0						390 U	390 U	390	390 U	390 U
subsurface	4-Chlorophenyl phenyl ether (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	4-Nitroaniline (ug/kg)	1	0	0						640 UJ	640 UJ	640	640 UJ	640 UJ
subsurface	Benzoic acid (ug/kg)	1	0	0						1300 U	1300 U	1300	1300 U	1300 U
subsurface	Benzyl alcohol (ug/kg)	1	0	0						130 UJ	130 UJ	130	130 UJ	130 UJ
subsurface	Bis(2-chloroethoxy) methane (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	Bis(2-chloroethyl) ether (ug/kg)	1	0	0						260 U	260 U	260	260 U	260 U
subsurface	Carbazole (ug/kg)	1	1	100	280 J	280 J	280	280 J	280 J	280 J	280 J	280	280 J	280 J
subsurface	Dibenzofuran (ug/kg)	1	1	100	470	470	470	470	470	470	470	470	470	470
subsurface	Hexachlorobenzene (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	Hexachlorobutadiene (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	Hexachlorocyclopentadiene (ug/kg)	1	0	0						640 UJ	640 UJ	640	640 UJ	640 UJ
subsurface	Hexachloroethane (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	Isophorone (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	Nitrobenzene (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	N-Nitrosodipropylamine (ug/kg)	1	0	0						260 U	260 U	260	260 U	260 U
subsurface	N-Nitrosodiphenylamine (ug/kg)	1	0	0						130 UJ	130 UJ	130	130 UJ	130 UJ
subsurface	1,2-Dichlorobenzene (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	1,3-Dichlorobenzene (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	1,4-Dichlorobenzene (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U
subsurface	1,2,4-Trichlorobenzene (ug/kg)	1	0	0						130 U	130 U	130	130 U	130 U

SUPPLEMENTAL FIGURES

- Figure 2. Drainage Basin and Outfall Map (CH2M HILL 2000)
Glacier Northwest Linnton Storm Water Handling Site Plan (no figure #)
Figure 2. Sampling Locations (CH2M HILL 2002b)
Figure 3. Sampling Locations (CH2M HILL 2002b)
Figure 5-1. Sampling Locations (CH2M HILL 2002a)

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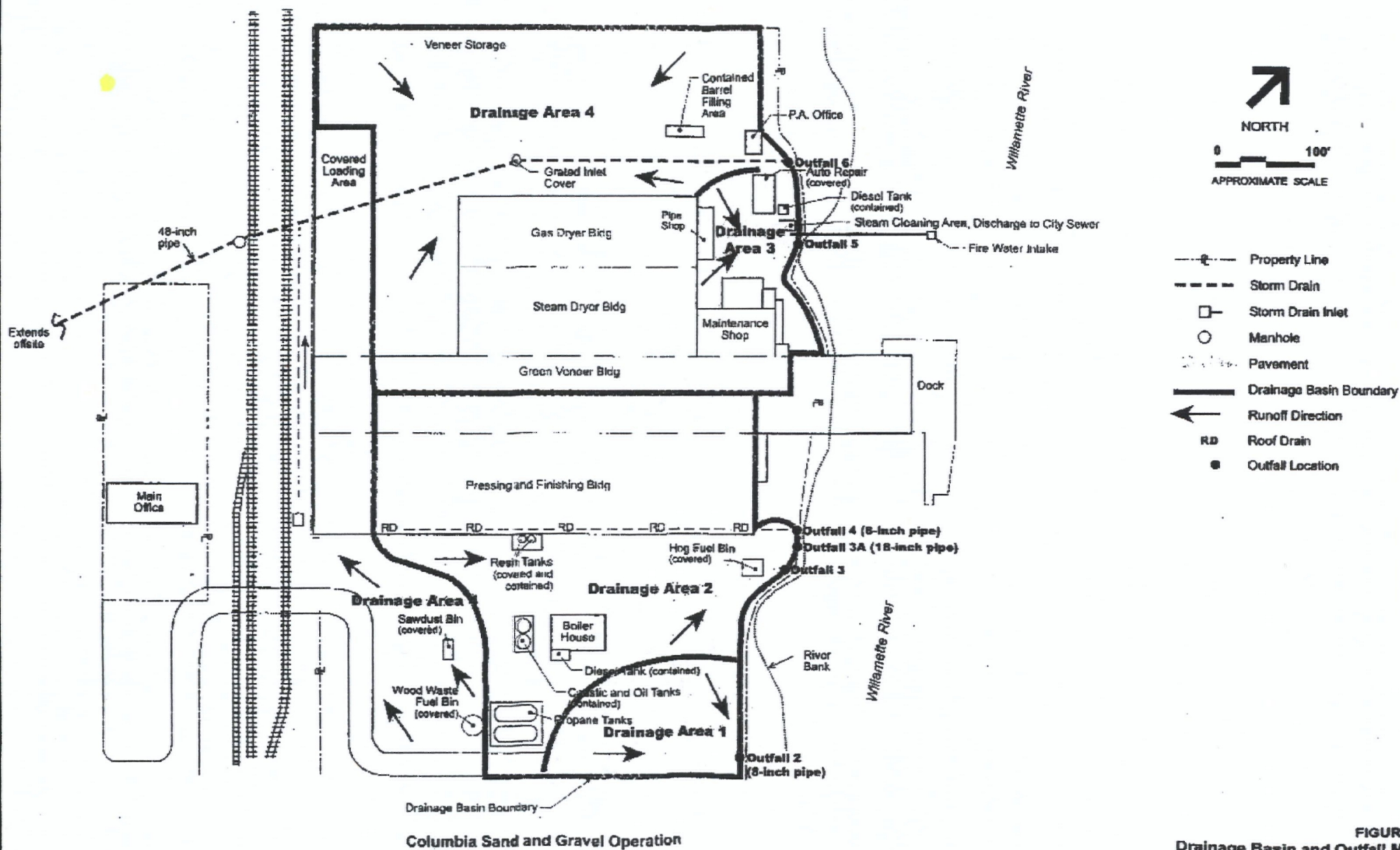
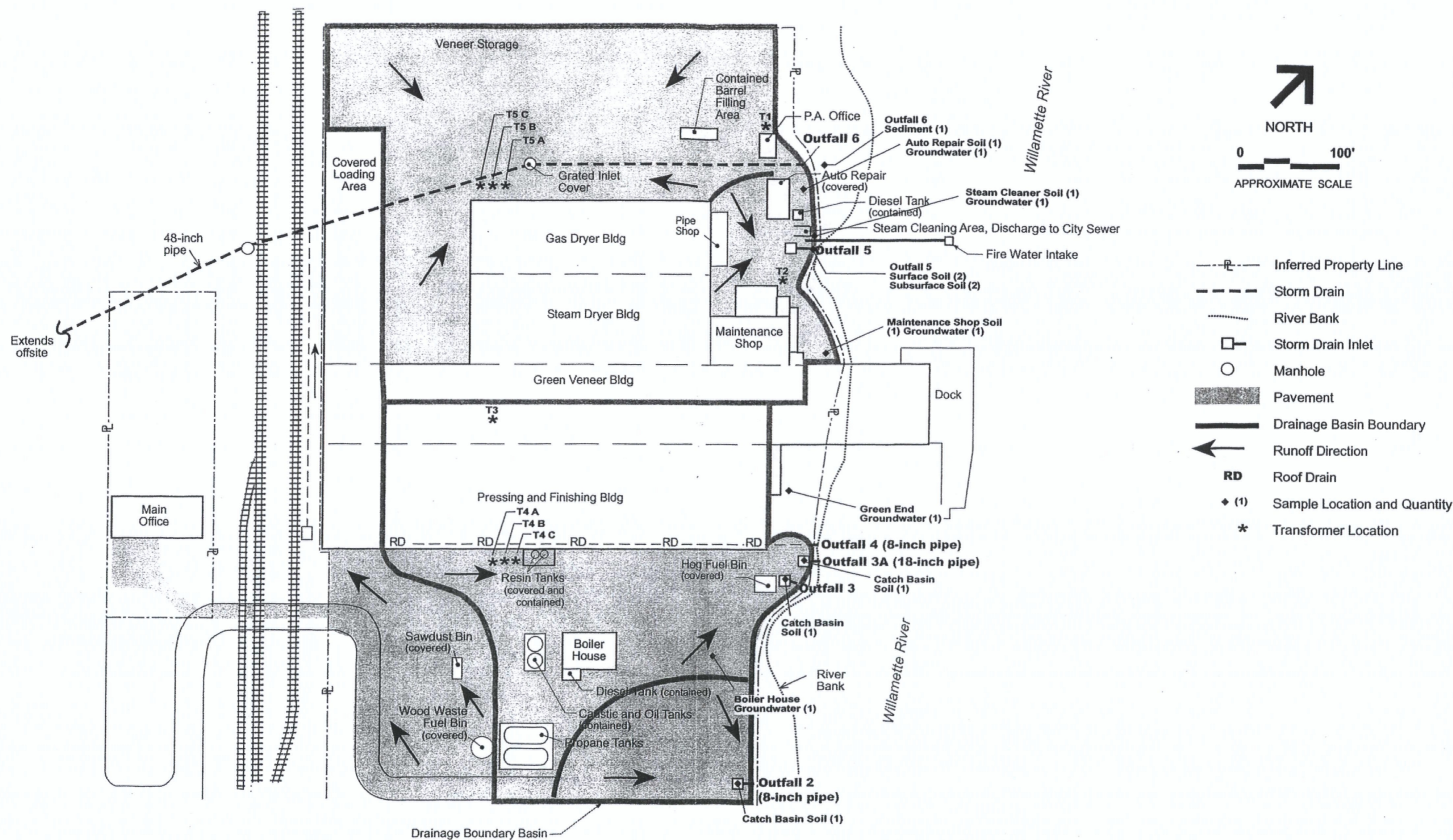


FIGURE 2
Drainage Basin and Outfall Map
 LINNTON PLYWOOD ASSOCIATION
 PORTLAND, OREGON



Columbia Sand and Gravel Operation

FIGURE 2
Sampling Locations
LINNTON PLYWOOD ASSOCIATION
PORTLAND, OREGON

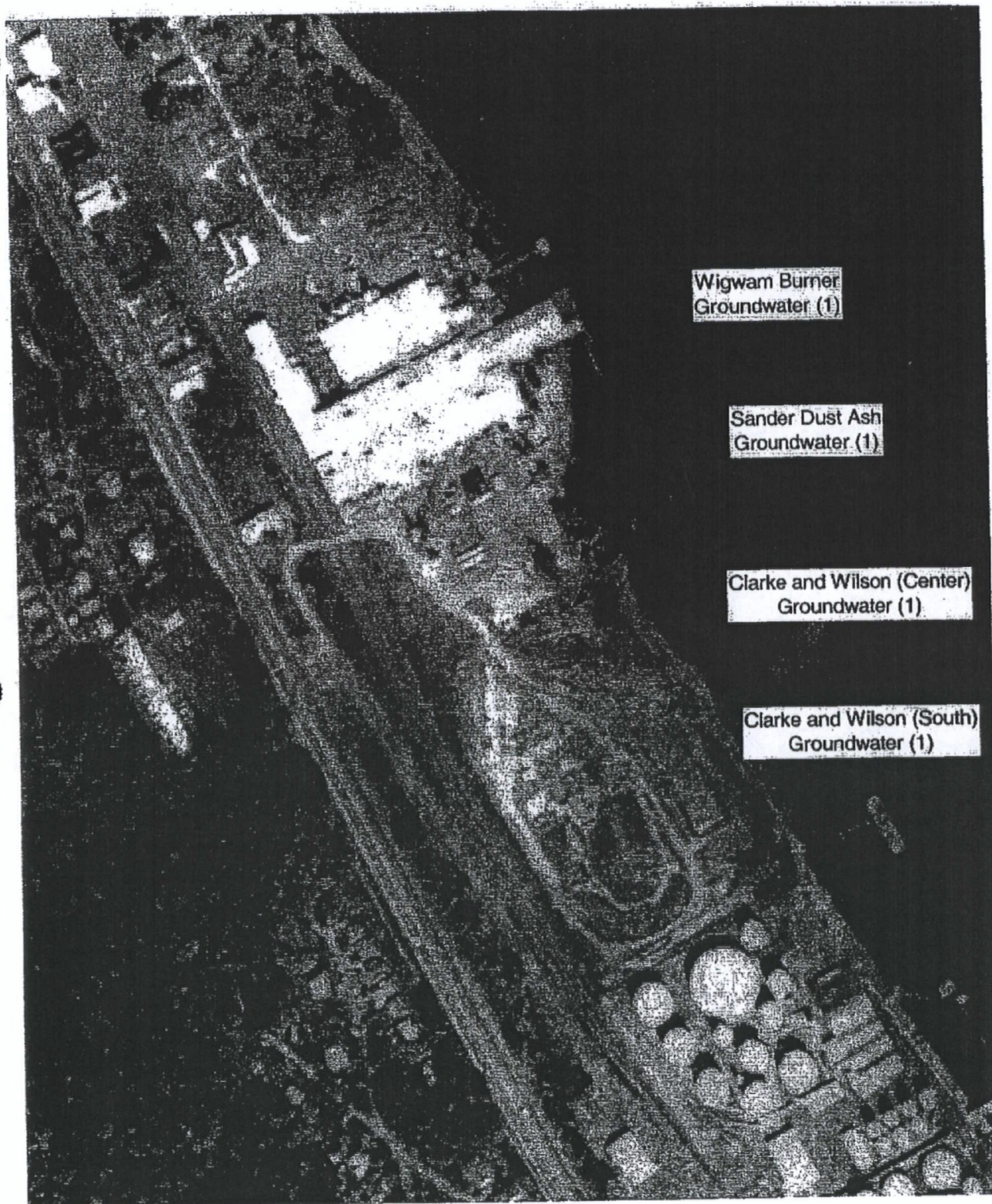


Figure 3
Sampling Locations
Linton Plywood Association
Portland, Oregon

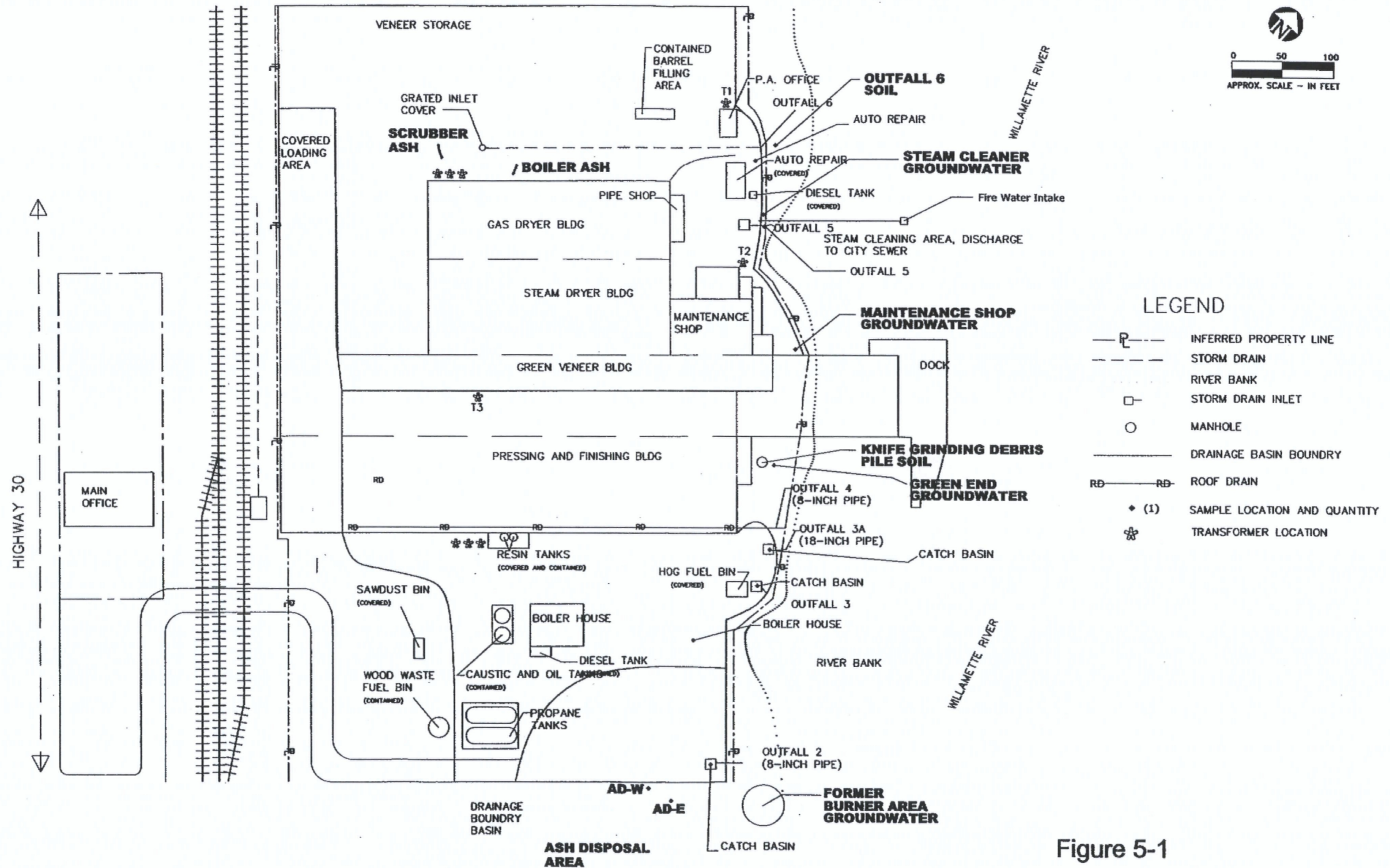


Figure 5-1
SAMPLING LOCATIONS-OCT. 2002
 LINNTON PLYWOOD ASSOCIATION
 PORTLAND, OREGON